

## **Slide Controller for an Audio-Mixer**

### **INVENTOR:**

**Robert Huber**

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### **BACKGROUND OF THE INVENTION**

#### **1. Priority Claim.**

[0001] This application claims the benefit of priority from PCT Application Number PCT/CH2004/000500, which claims priority to Switzerland Application Number CH 1428/03, filed 08/21/2003, both of which are incorporated by reference.

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#### **2. Technical Field.**

[0002] The present invention refers to a slide controller for an audio-mixer, in which a slide can be shifted along a limited path in a slot-like opening in a front plate.

#### **3. Related Art.**

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[0003] In modern, digitally operating audio mixers for audio signals it is common that one single slide controller may influence several functions or parameters. Thus, at least one selector key or one equivalent element is associated to such a slide controller, wherein the desired function or the desired parameter may be selected by this element. If this has taken place, the slide controller may be shifted manually or by a motor drive to the desired position, wherein the desired effect sets in. However, the problem frequently occurs that the operating person shall also know after a certain period of time which function or which parameter the selected slide currently influences. For this purpose it is known to integrate a display into a key by which the slide controller is operated for instance manually in a known manner. This may be implemented in that an illumination element is accommodated in the key and the key consists of translucent or transparent material. Thus, the key shall flash in different colors, depending on the function that it currently performs or influences. If the mixer is equipped with a screen, a display can also

be made thereon, which indicates which function or which parameters the selected slide controller currently influences.

[0004] These known solutions reveal the disadvantage that the illumination of the keys of the slide controllers is constrictively complex and is expensive in production. This is caused by the fact that the supply for the illumination in the movable part of the slide controller must be ensured. Moreover, it has often proven during practical use that the illumination of the keys is often too weak or is not sufficiently noticeable, since the keys project from the front plate and can also be illuminated by other light sources. If the selected function is displayed on the screen, this screen is usually more or less remote from the respective slide controller so that the eye of the operating person must also move back and forth. One has to take into consideration that modern mixers also comprise dozens of slide controllers also in the case of multiple occupation and thus a confusion is very likely to occur.

#### SUMMARY

[0005] Thus, it is an object of the invention, as it is characterized in the patent claims, to provide such a slide controller, which does not reveal the mentioned disadvantages and which clearly indicates which function it performs or which parameter it may influence by its position.

[0006] This is implemented according to the invention in that an illuminable element is provided longitudinally next to or preferably in the slot-shaped opening, in which the slide can be shifted along a limited path in the front plate, said illuminable element extending in parallel to the opening. The illuminable element appears as a luminous elongate strip when looking onto the front plate, said strip extending in parallel to the path of the slide. The luminous strip may be continuous or it may be divided into sections. The illuminable element consists of a light conductor and a light source, which may preferably emit multi-colored light. A multi-color light emitting diode is preferably provided as a light source. The illuminable element is connected to a selector key or a selector key field through a light conductor and a light source, by means of which said selector key or selector key field the desired function or the parameter searched for can be selected. The selector key for selecting at least one function is connected to the light source for the

illuminable element such that the light source is controlled such that a certain color for the light from the light source is associated to the respective function or the respective parameter. One selector key each can be provided for each function and one independent color for the light from the illuminable element may be associated for each function.

5 [0007] The advantages achieved by the invention are particularly to be seen in that it is easier to the operating person of the mixer to clearly recognize which predetermined slide controller is currently connected to which function or which parameter is may currently influence in the present position of the keys in the selector key field. By the provided type of illumination it is possible in a more simple way to also correctly perceive the color of  
10 the luminous strip in the slide controller also when the ambient light is bright. Since the key or knob of the slide controller, which shall be shifted by the hand of the operating person, covers part of the luminous strip, the operating person easily recognizes in which position the key or the knob is currently located along the opening. Thus, the work with several slide controllers, which carry out several functions or which may influence  
15 several parameters, is significantly facilitated so that less mis-operations must be expected.

[0008] Other systems, methods, features and advantages will be, or will become, apparent to one with skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and  
20 advantages be included within this description, be within the scope of the invention, and be protected by the following claims.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The system may be better understood with reference to the following drawings and description. The components in the figures are not necessarily to scale, emphasis  
25 instead being placed upon illustrating the principles of the invention. Moreover, in the figures, like referenced numerals designate corresponding parts throughout the different views.

[0010] Fig. 1 is a top plan view onto a part of an audio-mixer with several slide controllers.

30 [0011] Fig. 2 is a section through a slide controller along a line A-A in Fig. 1.

[0012] Fig. 3 is a view of a slide controller according to the invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] Fig. 1 shows a top plan view onto a part of an audio-mixer with several slide controllers 1 to 8. A slide 9, which in this case comprises a knob or a key, may be shifted in a slot-shaped opening 10 in a front plate 11 of an audio-mixer along a path 12 limited by the length of the opening. An illuminable element 13 is provided in or directly next to the opening 10, said element being visible from the top and which appears as an elongate strip. Besides other keys, which are not designated any closer in this case, particularly five selector keys 14 to 18 can be recognized, wherein each selector key 14 to 18 is provided for associating at least one of the slide controllers 1 to 8 to a function which is exerted onto one or several audio signals, or to influence or adjust at least one parameter which is important in the processing of one or several audio signals.

[0014] Fig. 2 shows a section through a part of an audio-mixer, comprising a slide controller, wherein a front plate 11, a printed circuit board 19, a slide 20, an actuator element 21 connected to the slide 20 and operable thereby, said actuator element for instance being formed as potentiometer, a light source 22 and a light conductor 23 can be recognized. The light source 22 may be a multi-color light emitting diode and is arranged on the printed circuit board 19. It is connected to a D/A converter 25 via lines 24. This D/A converter is connected via a line 26 to a processor 27, which is connected to at least one selector key 28 via a line 29. The opening 10 with the illuminated strip 13 can be seen in the front plate 11. The light conductor 23 is preferably arranged at the front plate 11, it could, however, also be attached on the printed circuit board 19.

[0015] Fig. 3 shows the elements already known from Figure 2, such as particularly the slide 20, the light conductor 23 and the opening 10 in side view. It can also be recognized that preferably two light sources 22a and 22b are provided, wherein each of the light sources is arranged at an end of the light conductor 23. The light conductor 23 therefore comprises one bent light shaft 30a and 30b each on the two ends, whose object it is to deflect the light from the light sources 22a and 22b in a direction that is parallel to the opening 10.

[0016] The mode of operation of the invention is as follows:

[0017] If a function or parameter is selected by a selector key 14 to 18 (Fig. 1) or 28 (Fig. 2), for which e.g. the slide controller 1 shall take effect, this is communicated to the processor 27 via the line 29. This processor 27 may exert this function, e.g. a filtering, a mixing etc., onto an audio signal of a line 33 and at the same time control the D/A converter 25 via the line 26, said D/A converter switching on the light source 22 or the light sources 22a and 22b via the lines 24 in a manner that this light source may irradiate light with the desired color. Thus, such a light source 22 or also both light sources 22a, 22b may irradiate light in the fixedly defined color, or a desired further color may be generated from the e.g. three colors that they irradiate by a mixture of the three colors. The light always reaches through the bent light shafts 30a, 30b into the light conductor 23 or its main part 32, which is formed such that it distributes the light possibly regularly in the longitudinal direction. This may be implemented by suitable coating or other measures. The light conductor 23 may be hollow or filled or it may also consist of a bundle of light-conducting fibers. In any case, the light shall emerge across the entire length of the opening 10 into same, which is ensured by a strip-shaped end face, which is arranged next to the movement path of the slide 9, 20 and which forms the illuminable element 13. The strip-shaped end face or the illuminable element 13 is connected to the main part 32 of the light conductor 23 via the multiply bent conductor 31, as it may well be seen in Fig. 2. The distribution of the light in the longitudinal direction may be implemented at a suitable distance from the opening 10 in the main part 32. The light then changes laterally from the main part 32 into the multiply bent conductor 31, which opens into the strip-shaped, illuminable element 13. In a respective manner the color of the illuminable element 13 in the slide controller 1 can be switched-off or varied by operating a different selector key. This depends on how this slide controller 1 is used by the respective selector key for his job in the mixer.

[0018] While various embodiments of the invention have been described, it will be apparent to those of ordinary skill in the art that many more embodiments and implementations are possible within the scope of the invention. Accordingly, the invention is not to be restricted except in light of the attached claims and their equivalents.